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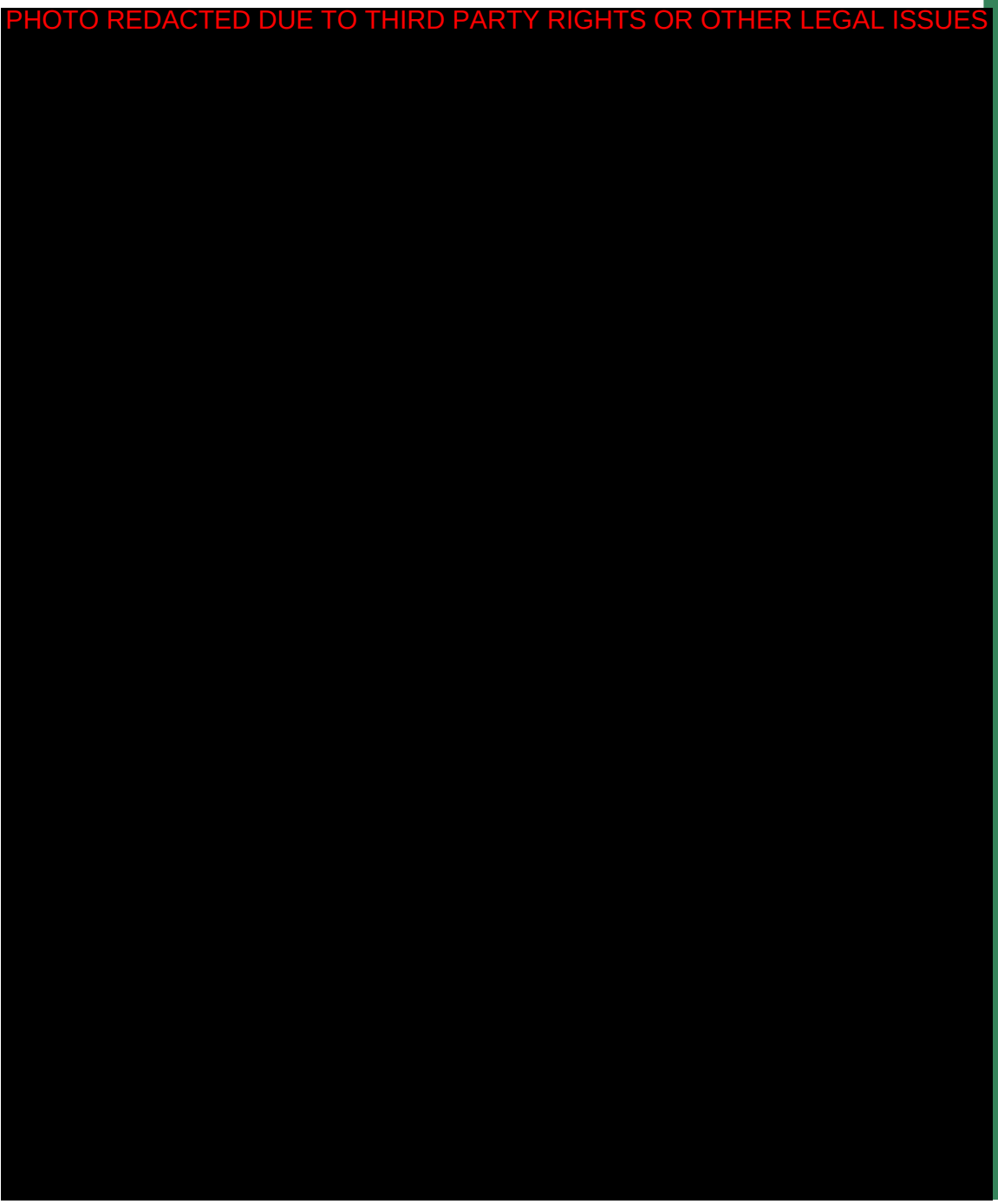
BRIEFING PAPER

Number 8389, 19 September 2018

Returns to a degree

By Paul Bolton
Sue Hubble



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Cover image: Degree certificate and cash, Paul Bolton , 19 September 2018

Summary

In 2012 tuition fees for undergraduates taking higher education courses in publicly funded institutions in England rose to £9,000. Since then fees have risen further and many institutions now charge fees of £9,250 per year for most of their courses. The increased cost of studying has led many commentators to question the value of a degree and to ask whether taking a degree is still worth it.

Research has shown that graduates tend to earn more than non-graduates – this is the so called 'graduate premium'. **Estimates of the size of the graduate premium vary, but are typically above £100,000 across a graduate's working life**. This is net of tax and after inflation is accounted for. **Graduates are also more likely to be working and less likely to be unemployed than non-graduates. There is some evidence that increasingly new graduates are employed in 'non-graduate' type roles.**

There is an ongoing debate about the actual size of the graduate premium and whether it has gone up or down over time. Whatever the precise level of the premium (on average) there is clearly strong evidence that there are substantial positive financial returns to a degree. This does not mean everyone will benefit to the same extent or even that every graduate will benefit.

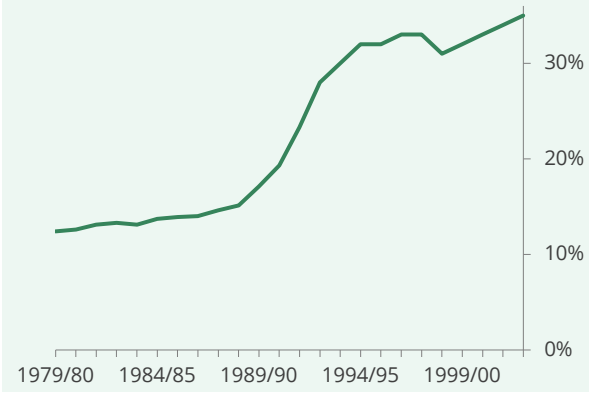
There are large variations in graduate earnings by subject with graduates of medicine, economics and many sciences earning substantially more than those who studied art & design, agriculture, English and mass communications. **There are also strong links between prior attainment and graduate earnings. Graduate earnings are higher for men and the gender gap increases over time**. While there is a link between different measures of disadvantage and graduate earnings and variations between some different ethnic groups, these are less strong than the link with prior attainment

The OECD has found similar evidence across most of the developed world and concluded that, after taking all associated costs into account, that higher education is a good 'investment' both for the private individual and for Governments.

It has also been shown that graduates experience various non-economic benefits from a degree and research has shown that graduates tend to have better health than non-graduates and are more likely to take an active part in society.

- The number of UK graduates has grown steadily for decades
- Graduates earn more than non-graduates and are more likely to be in work
- There is little evidence that the graduate premium has fallen over time
- Graduate earnings vary by gender, pre-HE qualifications, socio-economics and between some ethnic groups
- There are particularly large variations by subject studied: highest for medicine, economics, maths and engineering; lowest for art & design

HE EXPANDED RAPIDLY IN EARLY 90S



WHAT DO GRADUATES DO AFTER UNI?

% in sustained employments/further study 2015/16

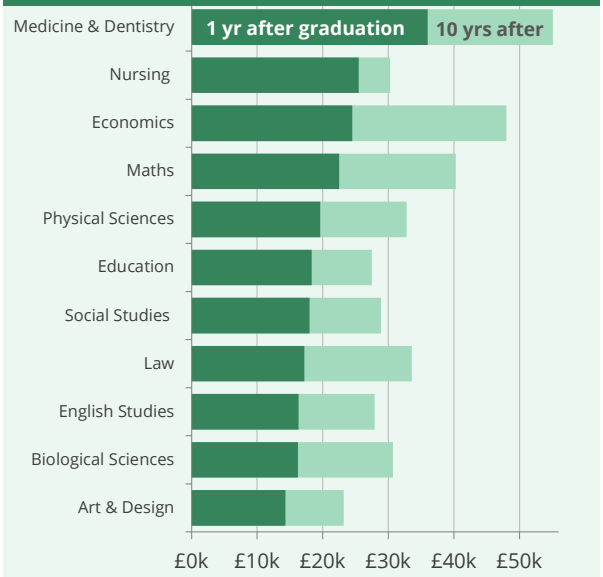
	Years after graduation... One	Three	Five	Ten
Female	77.8	74.3	71.7	67.3
Male	81.3	80.8	79.5	77
<21	86.5	87.5	86.3	84
All	**79.6**	**77.4**	**79.0**	**74.9**

WHAT DO GRADUATES EARN?

Median earnings 2015/16

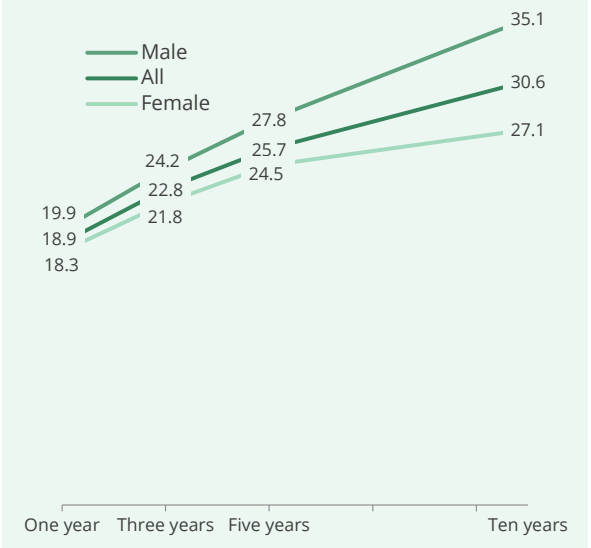
	Years after graduation... One	Three	Five	Ten
Female	£20,600	£25,000	£27,700	£32,000
Male	£19,800	£24,600	£27,500	£34,300
gap	*-£800*	*-£400*	*-£200*	*£2,300*
All	**£17,100**	**£19,500**	**£20,700**	**£29,100**

GRADUATE EARNINGS FOR SELECTED SUBJECTS



GENDER EARNINGS GAP INCREASES OVER TIME

median graduate earnings £ thousands



There is a large amount of research evidence on the financial returns to a degree in the UK. This paper does not attempt to aggregate or summarise all this evidence, but it lists some of the more important pieces of work, looks at some key findings and presents some newer data from the Department for Education's Longitudinal Education Outcomes (LEO) dataset.

General data on graduate outcomes can be found at:

- Higher Education Statistics Agency graduate data
- Department for Education Statistics: higher education graduate employment and earnings
- Office for Students: Differences in student outcomes
- OCED data on tertiary participation and graduate outcomes
- Department for Education: Graduate labour market statistics
- Universities UK: Higher education in facts and figures 2017

Readers may also be interested in the following related Library briefing papers:

- Review of Post-18 Education and Funding
- Higher education tuition fees in England
- Cost of university courses in England
- Higher education student numbers

1. Background

A report by the Institute for Fiscal Studies in July 2017 stated that graduates from England have the "highest student debts in the developed world". The increased focus on student debt and the high level of fees has led many prospective students to question whether a degree is worth it.

Many students taking university degrees hope to enter high paid professions and to earn a higher income than non-graduates. Large and consistent increases in the number of graduates have led many observers to conclude that the higher incomes earned by graduates, the 'graduate premium', has reduced or will do so soon.

There is now much more attention among prospective students and in the wider public on the costs of higher education and increasingly on the financial benefits of a degree and how this can vary.

Added to this over the last few years the Government has been encouraging more students to follow a vocational route, through agendas like the Industrial Strategy, the introduction of T-levels and by increasing apprenticeship places.

Increasingly, students are being advised to consider if university is the appropriate route for them and if alternatives might be a better option.

In this context this paper looks at the rise in participation in higher education, the demand for graduates, graduate employment and the benefits of higher education for individuals and society.

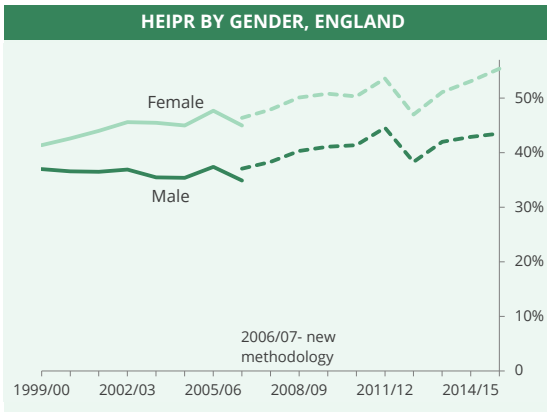
2. Graduates: Supply and demand

The increases in the number of people going to university and in the number of graduates has led many commentators to conclude that the financial returns to a degree will necessarily have fallen. Their argument is that with more graduates in the labour market to choose from employers will not have to pay them so much.

However, this view only looks at one side of the supply and demand equation. A fall in the graduate premium would make sense if the demand for graduates remains constant, but it has been argued that changes in technology and the structure of the workplace more generally mean that more jobs need higher skills.[1] This trend is expected to continue. The result is that the *demand* for graduates has also increased. This does not mean the graduate wage premium will have increased, it may have fallen somewhat even with increases in demand. But both sides of the equation need to be considered and their balance should determine the size of the premium, how it varies over time and between different sectors and roles.

2.1 Higher education participation

The UK higher education system has been expanding since the 1960s and expanded rapidly from the end of the 1980s until the middle of the 1990s.



The main participation indicator for England is the Higher Education Initial Participation Rate (HEIPR). It measures the participation of 17-30 year-olds from England who start higher education for the first time. The latest rate was **49%** in 2015/16. This was slightly up on the past few years, but still only matched the previous high in 2011/12. Trends are illustrated opposite.[2]

The Department for Education has said that enrolment at alternative providers may add 1.5 percentage points to the figure – this would mean that higher education participation **has reached the 50% target** set by the Labour government in 1999.[3]

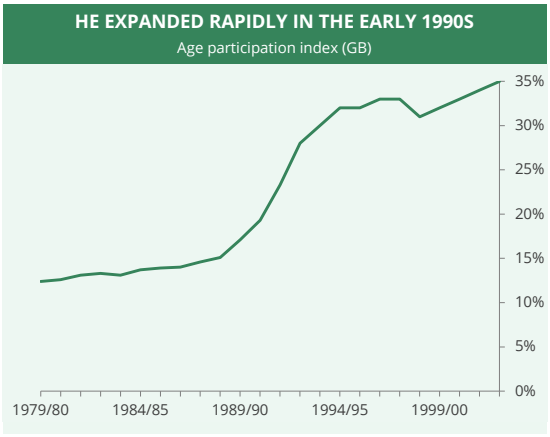
However education policy expert Nick Hillman, the director of the Higher Education Policy Institute (HEPI) has suggested that a 70% target might be beneficial:

> "In the context of Brexit, which may mean a reduction in the supply of highly-skilled migrants, and rising life expectancy…we should be planning ahead to increase the time spent in education,"

1 See, for instance, *UK labour market projections: 2014 to 2024*, UKCES
2 Department for Education, *Participation rates in higher education: 2006 to 2016*, 28 September 2017
3 "Blair's university targets spelt out", *BBC News* 30 January 2002

> "A target of around 70 per cent participation by 2035 should not be unachievable. That may sound ambitious, but it is a comparable trajectory to in the past and, as South Korea, Russia and Canada have all achieved participation way ahead of ours, it can surely be done.[4]

The HEIPR replaced the Age Participation Index which looked at entrants aged under 21 in Great Britain. This went from 12% in 1979 to 30% in the early 1990s before increasing more gradually to 32% by the end of the 1990s.[5] This trend is shown opposite.



2.2 Graduates in the adult population

In 2017 an there were an estimated **10.6 million** adults (16-64) in England who had a degree, equivalent or higher qualification. This was **31%** of the adult population. This rate has increased steadily from 18% in 2004 to over 20% from 2007 onwards and over 30% from 2016. In 2017 an additional 2.7 million adults, around 8% of the population, had a higher education qualification that was below degree level.[6]

Data from the Office for National Statistics (ONS) for the UK as a whole suggests there were around **14 million graduates** in the labour market 2017 (here defined as anyone with a qualification above A-level not currently studying) aged 21-64. This was **42%** of the population. Again this rate has increased consistently over time from 24% in 2002 to above 30% from 2009 and 40% in 2016.[7]

2.3 Demand for graduates

In their last Working Futures publication, the UK Commission for Employment and Skills (UKCES) looked at changes in the qualifications of the workforce in the decade to 2014 and made projections about the changing make-up of UK jobs to 2024, including the demand for employees with higher education.[8] Their key findings included:

- The number of people with higher education/equivalent qualifications in employment increased from 8.7 million in 2004 to 12.6 million in 2014; a **45% increase**
- This number is projected to grow to 17.7 million in 2024; a 41% increase over the decade.
- The number of *jobs* at this level is projected to rise by 5.3 million in the decade to 2024 (38%)

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4 Call for Higher Educational Attainment in Britain, *Inside Higher Ed,* 5 October 2017
5 *Education Statistics for the UK 2004*, and earlier, DCSF
6 *Annual Population Survey*, ONS (via www.nomisweb.co.uk)
7 Office for National Statistics *Graduates in the UK labour market: 2017*, 24 November 2017
8 UKCES, *Working Futures 2014 to 2024: main report*, 2 August 2016

- This increase is viewed as an indicator of demand (for employees with these skills) and follows on from economy-wide projections of change in employment by sector/job role and technology.
- The authors acknowledge that these projections are in reality due to changes in supply and demand and higher average qualifications are due to rising average qualifications of the population as a whole as well as increasing demand for higher skills.

A report by Universities UK in 2015, *Supply and Demand for Higher Level Skills* contained an analysis of the market in higher-level skills, and considered whether there were too many or too few graduates. It also looked into whether graduates' subject choices were suited to future labour market requirements, and to what extent graduates had the employability, practical and technical skills required by a modern knowledge economy. The report concluded that "**demand for higher-qualified workers largely outstrips demand for low and mid-level qualifications**":

> While there is indeed a strong – and unmet – demand for higher-level sub-degree skills, such as at BTEC or HND level, this does not mean there is a need to reduce the numbers earning a bachelor's degree or above. Alongside the economic and technological changes of the past decade, we have seen not only a large increase in the proportion of graduate jobs – one that is projected to continue – but also upskilling within specific occupations, where higher-level qualifications become increasingly necessary. Graduate talent seems to spur upskilling, and thus demand for more graduate talent.[9]

The demand for graduates among (specifically) graduate employers has fluctuated over the last few years, which, it has been claimed, could partly be due to Brexit. A press release by the Institute of Student Employers in January 2018 said that **graduate vacancies would increase by 11% in 2018**:

> Employers expect to increase their graduate job vacancies by 11% this year, marking a return to double-digit growth, reports the Institute of Student Employers (ISE).
>
> The annual Student Recruitment Pulse survey by the ISE (formerly Association of Graduate Recruiters) reported the intentions of 103 of the UK's largest student employers, which hired 12,994 graduates and 4,937 apprentices in 2017.
>
> This year employers are primed to offer an additional 1,423 graduate jobs.
>
> This marks a return to double-digit growth in the graduate jobs market, which was last evident pre-Brexit vote. In 2015 graduate vacancies grew 13%, compared to an 8% decrease in 2016 and 1% increase in 2017.
>
> As employers responded to the introduction of the Apprenticeship Levy, apprenticeship vacancies have continually increased during the same period, making up for some of the shortfall.
>
> In 2016 the number of apprenticeships increased by 13% and they rose by 19% in 2017. Compared to last year, employers are

[9] Universities UK, *Supply and Demand for Higher Level Skills* , December 2015, p33

expecting to offer 1,501 more apprenticeships – a growth rate of 32%.

Efforts to fill vacancies and reduce reneged offers have paid off for many employers. Just 38%of employers didn't fill their vacancies in 2017, compared to 52% in 2016. Last year 4% of offers were reneged, compared to 7% in 2016.[10]

[10] Institute for Student Employers, *Graduate jobs market to expand in 2018, reports Institute of Student Employers*, 11 January 2018

3. Graduate premium

The graduate premium is defined as the **additional lifetime earnings of a graduate compared to some other group** (by qualification level). Normally the comparator is those with two or more A-levels, but no degree. This is most often calculated using statistical techniques from large datasets to help identify differences in earnings that relate to qualification levels only and are not connected to other factors such as sex, geography, socio-demographic characteristics etc. They are normally expressed in discounted terms to give current values and allow comparison in a quasi-investment-type decision along the lines of '…what is the value now of my additional lifetime earnings compared to the costs of taking the course…' Here the cost would be fees and maintenance, whether direct or linked loan repayments plus lost earnings while studying.

The following articles and reports discuss the graduate premium in general terms:

- Universities UK report, *The Economic Benefits of a Degree,* Universities UK, 2007
- Intergenerational Foundation, *The Graduate Premium: manna, myth or plain mis-selling?* August 2016
- Institute for Fiscal Studies, *Graduate wage premium high but too variable?* September 2016
- Institute for Fiscal Studies, The puzzle of graduate wages, August 2016

3.1 Official estimates of the graduate premium

In 2003 the Labour Government estimated that the value of a first degree compared to 2 A levels was **£120,000** (£160,000 before tax) or **around 25%**. This estimate controlled for background factors that affect earnings.[11] The estimate was challenged by some commentators but remained a key piece of evidence used by the (then) Government in the debate about the value of higher education and student finance. In a written answer they said:[12]

> The latest evidence seems to indicate a small fall in the graduate premium in recent years. We don't know if this is a temporary reduction to a specific set of recent graduates—but even if confirmed the average premium would still remain comfortably over £100,000 across the lifetime of a graduate, in today's valuation, compared with a similar individual with 2+ A levels.

The Labour Government acknowledged in another written answer that the graduate premium would vary depending on a number of factors such as the institution attended and on the subject studied:[13]

11 HC Deb 8 December 2003 c285W
12 HC Deb 9 January 2006 c418W
13 HC Deb 19 May 2003 c566W

> **Mr. Boswell**: To ask the Secretary of State for Education and Skills if he will estimate the distribution of lifetime postgraduate income premiums by (a) types of course followed at university and (b) institution attended.
>
> **Margaret Hodge**: We said in the White Paper, "The Future of Higher Education", that graduates enjoy different returns from different courses and according to the institution attended. Recent research found a 44 percentage point difference in average returns between graduates from institutions at the two extremes of the graduate pay scale. No specific estimates have been made of the distribution of lifetime earnings premia by type of course or institution attended, for either first-degree graduates or post-graduates. However, we will be publishing research evidence later this year on how lifetime earnings premia might differ according to institution attended.
>
> Academic research on graduate returns at a point in time shows that while higher education is a good investment for the average graduate, returns do vary according to degree subject. External research also indicates that graduate earnings vary according to the institution attended. These findings suggest that graduate lifetime earnings differentials may be influenced by degree subject and institution attended.

Estimates published by the Government in 2002 suggested that a minority of graduates earned less than non-graduates. Around 11% of graduates were forecast to have lifetime earnings that were 10% or more *below* the non-graduate average. Just over half of graduates were estimated to earn over 75% *more* than non-graduates over their lifetimes.[14]

In 2010 the Coalition Government put the **lifetime premium at 'over £100,000'** after taxes in today's prices.[15] In 2013 they said:[16]

> Looking across the studies our conclusion is that over the course of a working life the average graduate earns comfortably over £100,000 more in today's valuation, net of tax, than someone with two or more A-levels who does not go to university.

These are deliberately imprecise figures/ranges as they are based on a variety of evidence which shows conclusions which are broadly consistent, but not exactly the same.

In 2016 the Minister for Universities and Science, Jo Johnson MP, quoted Government-commissioned research which showed:[17]

> …on average, a male graduate will earn £168,000 more, and a female graduate £252,000 more, over their lifetime than someone [of their gender] without a degree but with 2 or more A-levels, net of income tax, VAT, National Insurance and student repayments (2012 prices).

"a male graduate will earn **£168,000 more, and a female graduate £252,000 more**, over their lifetime than someone without a degree"

Jo Johnson, Minister for Universities and Science 2016

3.2 Research evidence

There are a large number of studies that estimate the size of the graduate earnings premium, how it has changed and how it varies

14 HC Deb 13 March 2002 c 1129w
15 HC Deb 25 November 2010 c409-10W
16 Written question 168417 [On Graduates: Incomes] 11 September 2013
17 Written question 28095 [On Graduates: Pay] 10 March 2016

across groups of students, institutions and subjects. The following concentrate on the overall level of the premium and net returns to a degree:

- Institute for the Study of Labor, *Differences by Degree: Evidence of the Net Financial Rates of Return to Undergraduate Study for England and Wales*, October 2010
- Department for Business, Innovation and Skills Research Paper NO 45, *The Returns to Higher Education Qualifications*, June 2011
- Department for Business, Innovation and Skills Research Paper NO. 112 *The Impact for University Degrees on the Lifecycle of Earnings: Some further analysis, August 2013 (Section 6 and table 16)*

The final report listed above was published five years ago, but has been more recently used by the Government to illustrate the higher lifetime incomes of graduates. Some of the key findings of this report were:

- Having a degree increases net discounted lifetime earnings by 28% for men (£168,000) and 52% (£252,000) for women.
- Returns to a first or upper second degree are "significantly larger" than for lower degree classes.
- Graduate earnings differentials had not been affected by the expansion of higher education
- Higher lifetime earnings translate to higher Government revenues of around £260,000 for a male and £320,000 for a female graduate.

Changes in the premium over time

Evidence from the academic literature on changes to the premium is mixed with some pointing to stable levels of graduate premiums and others shows a decline for some groups.

Research from 2005 which looked at premiums over the decade to 2000/01 (when proportionate increases in student numbers were especially large) emphasised the importance of supply and demand factors. They found evidence that in subjects where demand was high there was a positive and significant causal impact on graduate premiums. However, their analysis also indicated that observed declines in some subject premiums have been driven by the increased flow of graduates. **Overall they found a fall over time in the premium for female graduates**.[18]

A report by the Institute for Fiscal Studies in 2016[19] analysed the change in the premium over time and concluded that the **premium was remarkably stable**:

> While we do not claim that our empirical results for the organisational change explanation are definitive, we believe that

[18] O'Leary, Nigel C. and Sloane, Peter J., *The Changing Wage Return to an Undergraduate Education* (April 2005). IZA Discussion Paper No. 1549.

[19] Institute for Fiscal Studies, *The UK Wage Premium Puzzle: How did a Large Increase in University Graduates Leave the Education Premium Unchanged*? May 2016

> they do provide a coherent explanation of the remarkable stability of the education wage differential from the early 1990s until the mid-2000s in the UK, that occurred despite unprecedented increases in the share of entry workers with degree level education over the same period. This points to the UK responding to the substantial increase in university education through an adjustment in the organizational structure of work. (41)

Variations in the premium

The most widely cited and studied variation is by subject studied. This is in part down to the scale of earnings differentials by subject as well as the availability of the data. These results (and others) vary to a certain extent as we might expect given their differing methodologies, but there is a general pattern, first of **variability across subjects** and second of **lower, sometimes negative, returns for arts and some humanities and higher returns for medicine, economics, and certain sciences and maths**.

Some studies have looked at what type of institution that graduates attended, normally linked to their (perceived) prestige, for instance grouping them into 'old' or 'new' universities, Russell Group institutions etc. Results have been mixed with no consistent findings of significant variations by type of institution.

While evidence in differing returns by subject and institution may help inform potential students in their choices at university the evidence on variations by personal characteristics are more aimed at informing the debate around social mobility, widening participation and many other different questions of equality.

Much of the research literature looks across different variations in the earnings premium. This list below is far from exhaustive and is meant to give a flavour of the research on the subject:

- Walker I and Zhu Y (2002), *Returns to Education: Evidence from the Labour Force Survey*.
- O'Leary N and Sloane P (2005), *The Return to a University Education in Great Britain*
- Percell K. et at (2005), *The Class of '99: A study of the early labour market experience of recent graduates, A report to the Department for Education and Skills*
- Conlon G. and Chevalier A. (2002), *Financial returns to undergraduates: A summary of recent evidence* CIHE paper
- Conlon G. and Chevalier A. (2002), *Does it pay to attend a prestigious university?,* CEE discussion paper
- Crawford C and Vignoles A (2014), Heterogeneity in graduate earnings by socio-economic background
- Britton J et al (2016), How English domiciled graduate earnings vary with gender, institution attended, subject and socio-economic background
- Belfield C et al (2018), *The relative labour market returns to different degrees*

The next section looks at the findings of more recent research on graduate earnings and how it varies by subject studied, institution and personal characteristics.

3.3 Longitudinal Educational Outcomes (LEO) data

The LEO dataset links higher education and tax data to look at graduate outcomes. Compared to other sources it has a much larger sample and is better at looking at outcomes over time

In the past few years the Government has developed the Longitudinal Educational Outcomes or LEO dataset. This links administrative datasets from the higher education sector with those from further education, schools HMRC earnings and employment records and the Department for Work and Pensions' National Benefit Database and Labour Market System. It allows detailed information on graduate outcomes (employment and earnings) to be analysed by a wide range of different student/graduate characteristics.

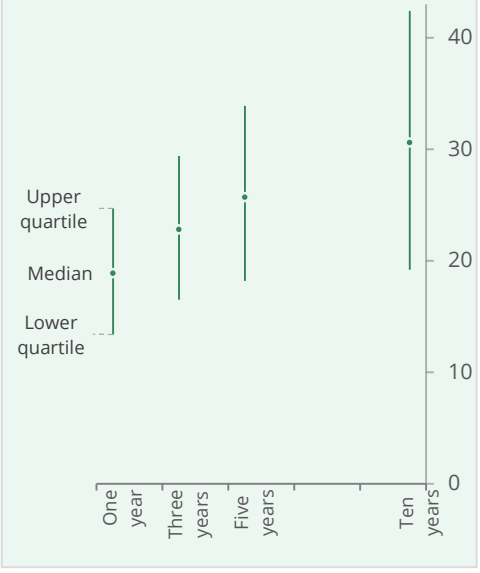
The latest LEO data is for the 2015/16 tax year and looks at the following first degree graduates from English higher or further education institutions:

- 2013/14 graduating cohort **one** year after graduation
- 2011/12 graduating cohort **three** years after graduation
- 2009/10 graduating cohort **five** years after graduation
- 2004/05 graduating cohort **ten** years after graduation

Published analysis of the LEO data is available at: Statistics: higher education graduate employment and earnings. The LEO data presented in this paper looks at home students who studied a first degree in England.

In 2015/16 the median annual earnings of the newest cohort of graduates was £18,900. This figures increases for earlier cohorts, as we would expect, with the **oldest cohort (in the dataset) earning £30,600 ten years after graduation**. Half of the newest graduates earned between £13,400 and £24,700. This is known as the interquartile range.[20] The chart opposite illustrates how this range is larger for the earlier cohorts –those graduating five and ten years previously. This increase is mainly driven by higher earnings at the top end of the scale. For instance, the earnings of those on the lower quartile five years after graduation was very similar to the equivalent figure for the cohort which graduated five years earlier. In contrast the earnings of those on the upper quartile was 25% higher in this earlier cohort.[21]

DISTRIBUTION OF EARNINGS BY COHORT (£ thousands)



[20] The first figure is the lower quartile which is the figure below which 25% of values lie. The second figure is the upper quartile which is the figure above which 25% of values lie.

[21] DfE *Graduate outcomes (LEO): 2015 to 2016*, 16 March 2018

Graduate characteristics

The table opposite shows median earnings by gender

Men earn more than women on this measure at each stage of their career (time since graduation) and this gap increases from around 9% one year after graduation to almost 30% ten years after graduation. The gender breakdown is also shown opposite

The chart on the next page looks at earnings data for a much wider range of personal characteristics. One year after graduation the largest variations were by:

- Prior attainment level
- Type of institution
- Age (started course)
- POLAR group[22]

There were also clear patterns by region (higher averages in London and the South East), free school meal status and among some different ethnic groups (highest Chinese and Indian, lowest Pakistani and Bangladeshi).

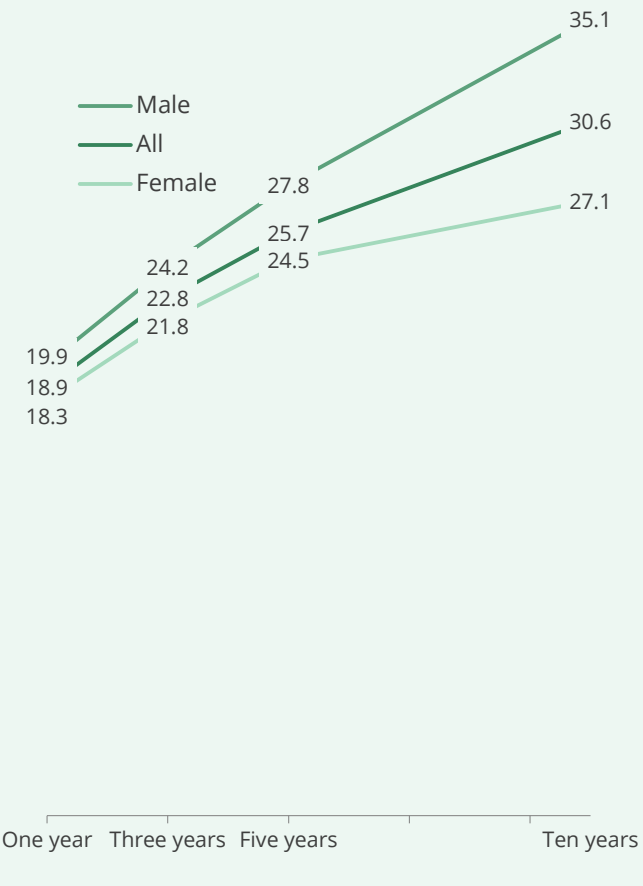
WHAT DO GRADUATES EARN AFTER LEAVING UNI?

Median earnings 2015/16

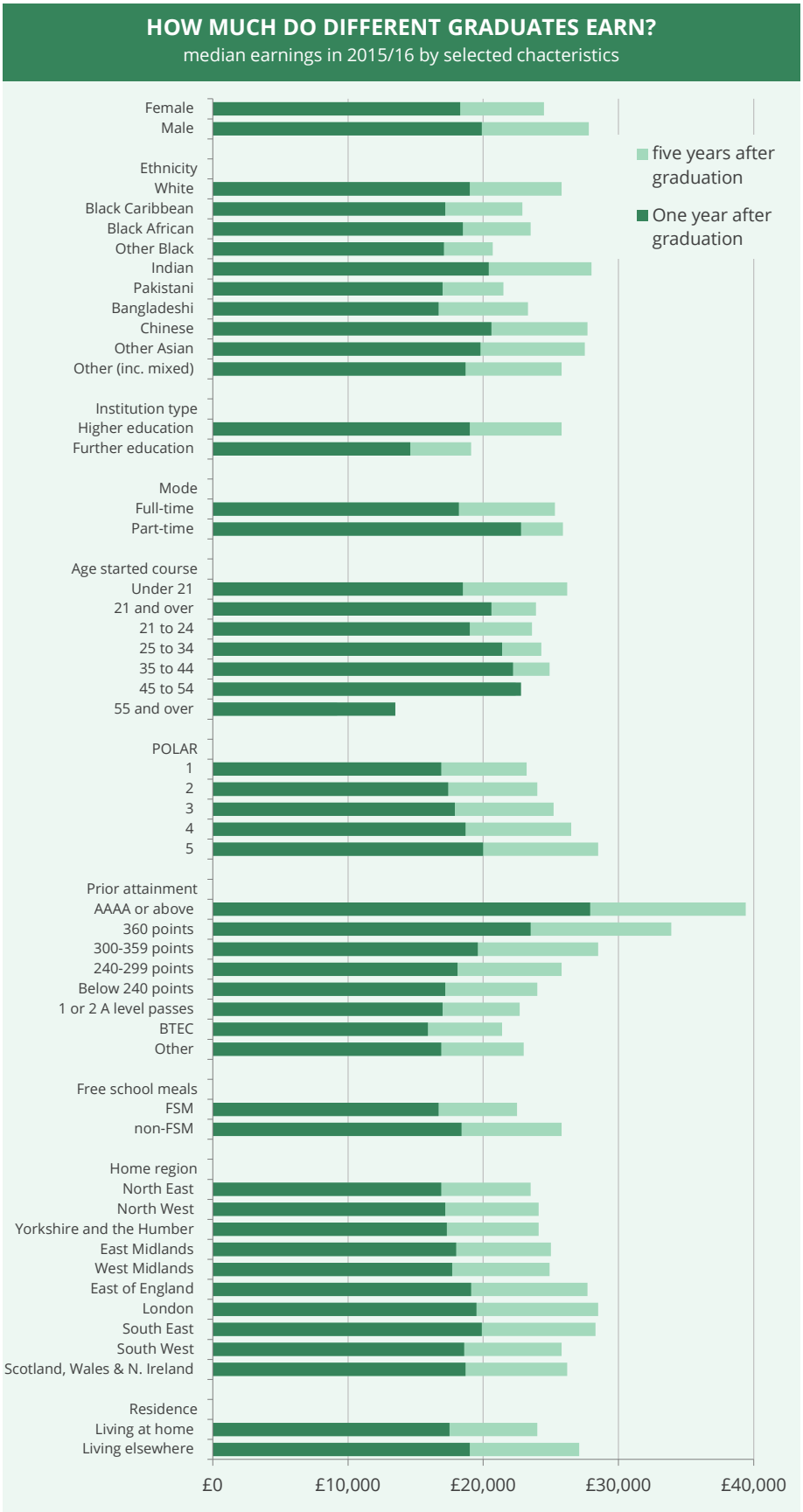
	Years after graduation... One	Three	Five	Ten
Female	£18,300	£21,800	£24,500	£27,100
Male	£19,900	£24,200	£27,800	£35,100
gap	*£1,600*	*£2,400*	*£3,300*	*£8,000*
All	**£18,900**	**£22,800**	**£25,700**	**£30,600**

GENDER EARNINGS GAP INCREASES OVER TIME

median graduate earnings £ thousands



[22] An area classification based on historical levels of HE participation, ranging from 1 the lowest (20%) band to 5 the highest. This is sometimes seen as a proxy for deprivation from 1 the most to 5 the least deprived.


HOW MUCH DO DIFFERENT GRADUATES EARN?
median earnings in 2015/16 by selected chacteristics
five years after graduation
One year after graduation
Female
Male
Ethnicity
White
Black Caribbean
Black African
Other Black
Indian
Pakistani
Bangladeshi
Chinese
Other Asian
Other (inc. mixed)
Institution type
Higher education
Further education
Mode
Full-time
Part-time
Age started course
Under 21
21 and over
21 to 24
25 to 34
35 to 44
45 to 54
55 and over
POLAR
1
2
3
4
5
Prior attainment
AAAA or above
360 points
300-359 points
240-299 points
Below 240 points
1 or 2 A level passes
BTEC
Other
Free school meals
FSM
non-FSM
Home region
North East
North West
Yorkshire and the Humber
East Midlands
West Midlands
East of England
London
South East
South West
Scotland, Wales & N. Ireland
Residence
Living at home
Living elsewhere
£0
£10,000
£20,000
£30,000
£40,000

Some, but not all, of these patterns were still apparent for the cohort that graduated five years previously. There were as strong, or stronger patterns by prior attainment, POLAR group, region and institution type. Median earnings for those with the highest pre-higher education qualification levels were almost £40,000 five years after graduating compared to below £23,000 for those with the lowest A level grades and just over £21,000 for those with BTECs. Median earnings for those from POLAR group 5[23] were over £34,000; more than £5,000 or almost 20% higher than the median for group 1.[24]

Earlier patterns by age and mode of study were much weaker or reversed. This should not be a surprise at these are related characteristics, older students are more likely to study part-time and already have started their career. Any post-graduation earnings advantage is short-term.

Patterns by ethnic group for the different cohorts are more mixed for this earlier graduating cohort. Indian and Chinese graduates still had higher median figures. 'Other Black' and Pakistani graduates saw relatively small increases between the 2009/10 and 2013/14 cohorts.

Subject studied

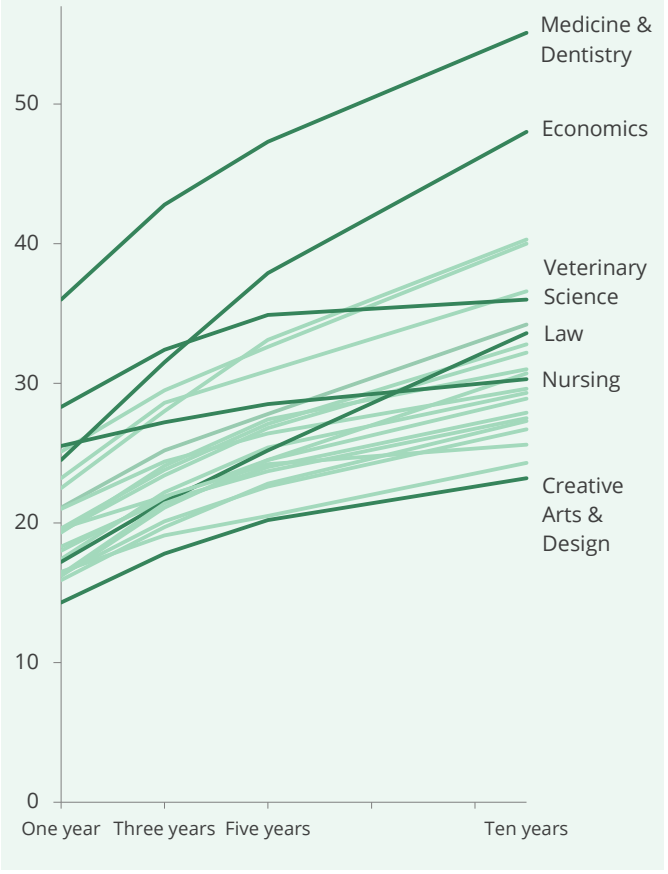
The chart opposite looks at median earnings by subject of first degree, one year after graduation and, here, ten years after graduation.[25]

Medicine & dentistry graduates earned the most of any subject on average and arts & design the least. This was the case in all cohorts. Subjects with relative high earnings in the most recent cohort, but where averages for the earlier cohort are not much higher (in relative) terms include nursing, veterinary science and subjects allied to medicine. These can be considered subjects with relatively slow wage growth. In contrast the earnings of the earlier cohorts of economics, law and maths graduates were (relatively) much higher compared to the newest graduating cohort. This implies relatively high average increases in their earnings over this period of their careers.

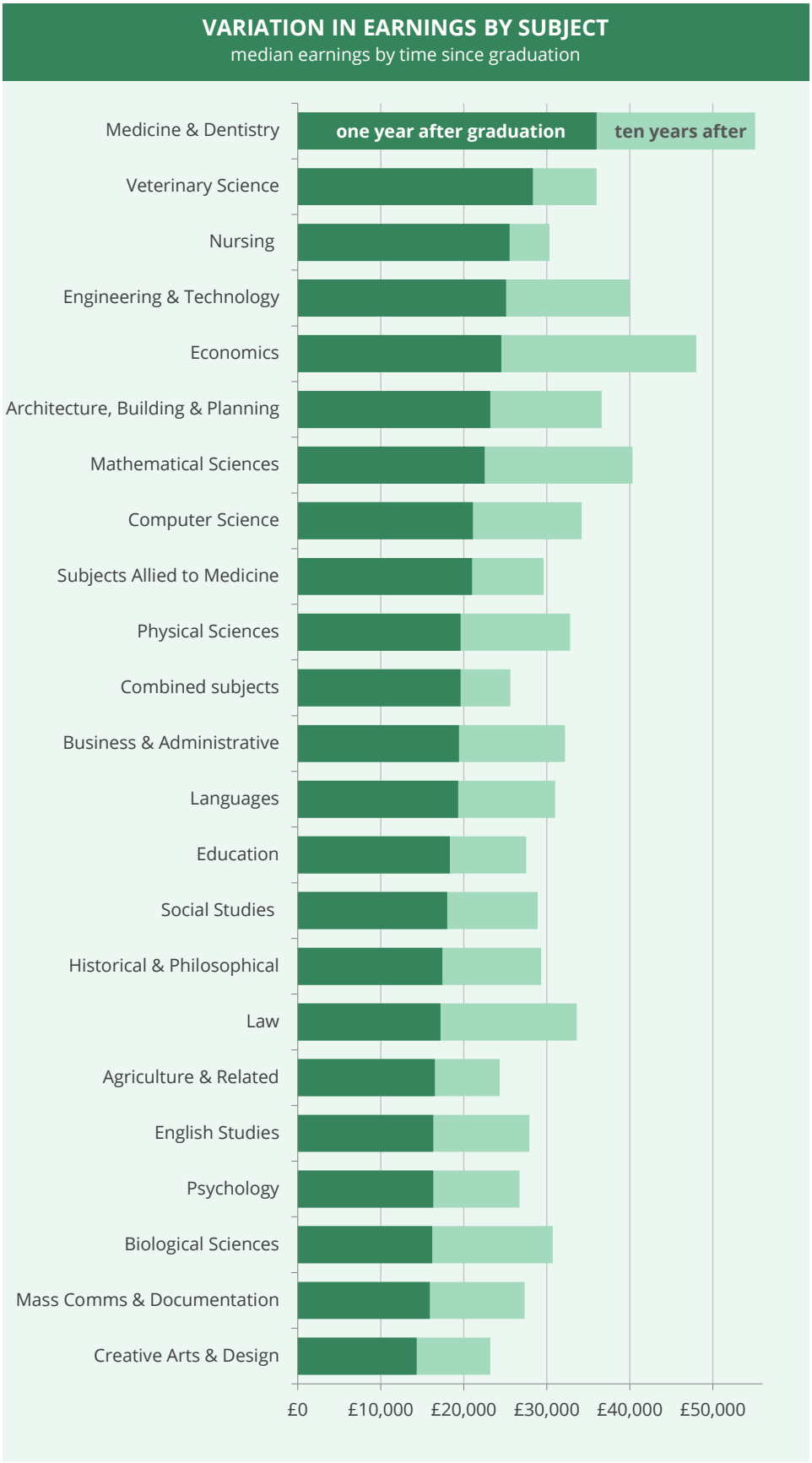
The slope chart opposite shows the relatively fast and slow 'career' growth in earnings by highlighting selected subjects.

WAGE GROWTH VARIES MARKEDLY BY SUBJECT

median graduate earnings by subject and cohort £ thousands



[23] From areas with the highest past levels of higher education participation
[24] From areas with the lowest past levels of higher education participation
[25] The characteristics data is missing values for prior attainment and FSM status in the 2004/05 cohort, so the 2013/14 and 2009/10 cohorts are illustrated.


VARIATION IN EARNINGS BY SUBJECT
median earnings by time since graduation
one year after graduation
ten years after
Medicine & Dentistry
Veterinary Science
Nursing
Engineering & Technology
Economics
Architecture, Building & Planning
Mathematical Sciences
Computer Science
Subjects Allied to Medicine
Physical Sciences
Combined subjects
Business & Administrative
Languages
Education
Social Studies
Historical & Philosophical
Law
Agriculture & Related
English Studies
Psychology
Biological Sciences
Mass Comms & Documentation
Creative Arts & Design
£0
£10,000
£20,000
£30,000
£40,000
£50,000

3.4 International data

In 2015 workers aged 25-64 across the OECD with a first degree or equivalent earned on average 46% more than those with upper secondary qualifications. The gap was slightly higher in the UK at 51%. Across the OECD's major economies it was also above average in the US (66%) and Germany (58%). It was below average in France at 38%.

Looking across all tertiary level qualifications the OECD gap was 56%. The UK's figure was slightly lower at 53% (more than those with upper secondary qualifications). Again the gap was above average in the US (74%) and Germany (66%). It was below average in Australia (40%), Italy and Korea (both 41%).[26]

The OCED has also looked at the lifetime public and private costs and benefits of attaining tertiary education. The UK is not included in the analysis as there was insufficient or missing data in different areas. There overall conclusions across countries with data were:[27]

- Not only does education pay off for individuals financially, but the public sector also benefits from a large proportion of tertiary-educated individuals through, for instance, greater tax revenues and social contributions.
- Adults completing tertiary education benefit from substantial returns on investment: they are more likely to be employed and earn more than adults without tertiary education.
- Gender matters: on average across OECD countries, the private net financial returns for a woman with tertiary education are about two-thirds of those for a man with a similar level of education.
- Across OECD countries, the average private financial returns from tertiary education for a man are US$252,100. … For a woman, on average, net financial returns for tertiary education are US$167,400, representing only two-thirds of those for a man.
- Another way to analyse returns to education is through the internal rate of return, … the interest rate on the investment made on a higher level of education that an individual can expect to receive every year during a working-age life. On average across OECD countries, the internal rate of return to tertiary education for men is 13%, and 11% for women
- Public net financial returns are based on the difference between costs and benefits associated with an individual attaining an additional level of education. …costs include direct public costs for supporting education and foregone taxes on earnings, while the benefits are … income tax, social contributions, social transfers and unemployment benefits.
- On average across OECD countries, the total public cost for a man to attain tertiary education is US$54,900 and US$51,800 for a woman
- Governments offset the costs of direct investment and foregone tax revenue associated with education by receiving additional tax revenue and social contributions from higher-paid workers, who often have higher educational attainment. On average, these total public benefits are US$208,900 for a man and US$135,200 for a woman with tertiary education

[26] Education at a Glance, OECD (Indicator A6)
[27] Education at a Glance, OECD (Indicator A7)

4. Graduate employment

Levels of employment among graduates are higher and unemployment lower than among the population with lower levels of qualification. The gap with those qualified below A-level/equivalent is particularly large.

The latest data on graduates in the UK labour market is for the third quarter of 2017 and shows:[28]

- **82% of graduates (aged 21-64) were in employment** compared to **78%** of those qualified to A-level/equivalent, **72%** among those with only GCSE/equivalent and **43%** of those with no qualifications.
- **86% of male and 79% of female graduates were in work**. Part-time employment was much more common among women who had been to higher education (33% v 8% for men)
- **3% of graduates and those qualified to A-level were unemployed**, **5%** at GCSE level and **8%** of those with no qualifications.
- Unemployment among recent graduates[29] was higher than among other graduates at 5% compared to 2%. They were still below rates for non-graduates of a similar age[30] at 7%.
- **Young non-graduates saw the largest increase in unemployment** during the recession; a much larger absolute increase than among recent graduates.
- Young non-graduates were much more likely than recent graduates to be out of the labour market altogether.[31] 17% were in this category compared to 6% of recent graduates.

The latest Department for Education Graduate labour market statistics includes data on earnings and employment status by level of study. Headline results are summarised in the table below. Readers should note that here the 'non-graduate' group includes all those without higher education qualifications, not just those with A-levels or other upper secondary qualifications.

UNEMPLOYMENT RATES AND MEDIAN SALARIES IN THE UK, 2017

	Young high-skill employment rate (age 21–30)	High-skill employment rate (age 16–64)	Young unemployment rate (age 21–30)	Unemployment rate (age 16–64)	Young median salary (age 21–30)	Median salary (age 16–64)
Postgraduate	74%	78%	5%	2%	£29k	£39k
Graduate	58%	66%	4%	3%	£25k	£33k
Non-graduate	18%	22%	7%	5%	£20k	£23k

Source: Graduate labour market statistics: 2017, DfE

28 Graduates in the UK labour market: 2017 24 November 2017
29 Those who graduated in the previous five years.
30 21-30
31 Economically inactive

International data

There is a similar pattern of employment by level of education across the OECD. In 2016 **83% of graduates aged 25-34 were in employment** compared to **71%** of those with 'upper secondary' qualifications and **59%** of those with qualifications below upper secondary level. These gaps have remained broadly the same since the start of this century. All groups saw a small reduction in employment rates, but the greatest fall was among those with the lowest qualifications. The OECD shows the UK had slightly smaller employment rate differences by education level than the OECD average. The gaps in the US, France and Germany were all above average.

In 2016 **6.6% of graduates aged 25-34 were unemployed** across the OECD. As with the UK data rates were higher among those with lower qualifications: **9.1%** for those with upper secondary and **16.8%** for those with below upper secondary qualifications. Unemployment rates for this age group were much lower in the UK than the OECD average, but the relative gaps by education level were larger than average.[32]

Underemployment of graduates

An ongoing concern among some commentators who question the continued expansion of higher education is that graduates are underemployed. Graduates have higher employment rates but many are not working in jobs that need graduate skills. The Office for National Statistics publishes estimates of the proportion of graduates employed in non-graduate roles using the following definition:

> Professors Peter Elias and Kate Purcell at the University of Warwick have defined a non-graduate job as one in which the associated tasks do not normally require knowledge and skills developed through higher education to enable them to perform these tasks in a competent manner. Examples of non-graduate jobs include receptionists, sales assistants, many types of factory work, care workers and home carers.

The proportion of recent graduates in non-graduate roles was below 40% in 2001. It has gradually gone up since then with a particular increase just after the recession. It peaked at **50% in 2012** before falling back somewhat. There is some evidence that it has started to increase again, the **latest rate is was 49%,** the highest 3rd quarter figure since 2012. The ONS said of the overall upward trend "This may reflect **lower demand for graduate skills as well as an increased supply of graduates**." The rate among non-recent graduates is lower and has only increased modestly over this period. The latest rate for this group was 37%.[33]

A report by the Chartered Institute of Personnel Development (CIPD) in 2015,[34] found that **many graduates were over-qualified and over-skilled for the current labour market and were under-utilised in**

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32 Education at a Glance, various years, OECD (Indicator A5)
33 Graduates in the UK labour market: 2017 24 November 2017
34 Chartered Institute of Personnel Development, *Over-qualification and skills mismatch in the graduate labour market*, August 2015

their jobs. The report however also pointed out that many jobs considered to be non-graduate had been **upgraded** and now required graduate skills:

> However, there are many alternative (not necessarily exclusive) interpretations. It could be that the content of the jobs now being entered by graduates has been upgraded, so that, although occupational title has not changed, the jobs are more productive. The extra skills that graduates have acquired in HE are being fully utilised. Thus the central question posed in this report is the extent to which graduate skills are being utilised and the ways in which occupations are changing in order to take advantage of available skills.[35]

A press release by Universities UK[36] commenting on the CIPD report disputed the findings on the under-employment of graduates:

> A report this week by the Chartered Institute of Personnel and Development (CIPD) concluded that the majority of UK university graduates are working in jobs that do not require a degree and that 'graduate over-qualification' has reached 'saturation point'.
>
> The CIPD suggested that some young people should think carefully about entering higher education when "for example, going into an apprenticeship at 16 or 18 could be a much better choice".
>
> The report raises some interesting questions, but does not, however, reflect the latest graduate jobs outlook. It does not, either, take into account the reality of how graduates end up in their long-term careers and the lifelong benefits that come with getting a degree.
>
> It is worth bearing in mind that many graduates do not go straight into their chosen careers after graduating. In reality, some will get short-term jobs to fund further study or to go travelling, for example. Employment figures looking at what graduates are doing three and a half years after graduation show that the majority are in full-time employment.
>
> The official Graduate Labour Market Statistics for the first quarter of 2015 show that the employment rate for working age graduates is 87.5%, the highest level seen since late 2007. The unemployment rate for young graduates is also the lowest since 2007. At 3.9%, it is well below the 9.0% unemployment rate for young non-graduates.
>
> The figures show also that working-age graduates still earn a significant premium over non-graduates. They earn almost £10,000 a year more than people without degrees.
>
> […]
>
> According to recent research from the UK Commission on Employment Skills (UKCES) there will be 7.8 million additional high-skilled jobs between 2012-2022. So, how many new graduates can we expect in this timeframe? While it is difficult to form a precise estimate, the government has predicted 2.9 million additional undergraduate higher education entrants (not graduates) between 2012-13 and 2019-20, with the biggest jumps occurring between 2012-13 and 2014-15. If we assume that academic years 2020-21 and 2021-22 will be similar to 2019-

35 Ibid p28
36 Universities UK, Skilled UK graduates are in demand, 20 August 2018

> 20 (390,000 additional entrants per year), then we can suggest there will be roughly 3.7 million additional graduates to fill the 7.8m additional high-skilled jobs between 2012 and 2022.
>
> […]
>
> And let us not forget the many related benefits that higher education offers. University provides the ability to think critically, analyse and present evidence – the skills that future leaders in business, the third and public sectors often so desperately need. The same CBI/Pearson survey demonstrates the value employers place on graduate skills, with more than two-thirds either satisfied or very satisfied with communication, team working and technical skills as well as analysis and problem solving skills and positive attitude to work.

The picture of graduate employment is complex and a report by Universities UK *Higher Education in England: Provision, Skills and Graduates*, September 2016 showed[37] that many students who are **not in professional level jobs 6 month after graduating have moved into professional level jobs by 40 months after graduating**.

4.1 LEO data

The LEO dataset looks at the different destinations of graduates. These are closely related to the tax and higher education sources used and, for the tax year in question, are:

Sustained employment only: employed for at least one day for five out of the six months between October and March or have a self-employment record. No record of further study.

Sustained employment with or without further study: includes all graduates with a record of sustained employment, regardless of whether they also have a record of further study. A graduate is defined as being in further study if they have a valid higher education study record at any UK HE institution. This does not have to be at postgraduate level.

Sustained employment, further study or both: includes all graduates in the 'sustained employment with or without further study' category as well as those with a further study record only.

No sustained destination: graduates who have an employment or out-of-work benefits record in the tax year in question but were not classified as being in 'sustained employment' and do not have a further study record.

Activity not captured: graduates who have been matched to DWP records but do not have any employment, out-of-work benefits or further study records in the tax year of interest. Reasons for appearing in this category include: moving out of the UK after graduation for either work or study, earning below the Lower Earnings Limit or voluntarily leaving the labour force.

In tax year 2015/16 around **six out of every seven of those who had graduated a year earlier (2013/14 cohort) were in sustained employment**, still in education or a combination of the two.

[37] Universities UK, *Higher Education in England: Provision, Skills and Graduates*, September 2016 p23 figure 17

The table opposite shows that this rate was similar for those who had graduated three years earlier, but lower for those graduating five and ten years previously. Female graduates had a higher rate than males, but the gap was smaller for the earlier cohorts. The proportion in sustained employment (only) is higher for the earlier graduating cohorts as fewer will still be continuing their studies after their first degree. The 2015/16 employment only rate was 67% for the 2013/14 cohort 73% for the 2020/11 cohort increasing to 77% for the 2004/05 graduating cohort.

WHAT DO GRADUATES DO AFTER LEAVING UNI?

% in sustained employments and/or further study 2015/16

	Years after graduation...			
	One	Three	Five	Ten
Female	87.6	87.6	86.2	82.8
Male	84.6	85.1	84.3	82.3
<21	86.4	87.2	86.3	83.8
All	**86.4**	**86.5**	**85.4**	**82.6**

The table opposite gives a breakdown of graduates who were not in sustained employment or study. The earlier cohorts were less likely to be in 'no sustained destination', but more likely to be in 'activity not captured'. Both rates were generally higher among male graduates. The exception is female graduates from the earliest cohorts who were more likely to have no sustained destination, ie. working temporarily or on out of work benefits.

GRADUATES NOT IN STUDY OR WORK

	Years after graduation...			
	One	Three	Five	Ten
No sustained destination (%)				
Female	7.7	6.0	5.4	4.6
Male	9.1	6.6	5.6	4.1
All	**8.3**	**6.2**	**5.5**	**4.4**
Activity not captured (%)				
Female	4.6	6.4	8.4	12.6
Male	6.2	8.3	10.1	13.6
All	**5.3**	**7.2**	**9.1**	**13.0**

Graduate characteristics

The charts on the following page look at variations in the proportion of graduates in the two 'not in study/work' categories. The first covers variations by personal characteristics, the second by subject studied.

Overall there was relatively little variation in the proportion not in study/work for most student characteristics. The main exceptions, one year after graduating, with well above average rates were:

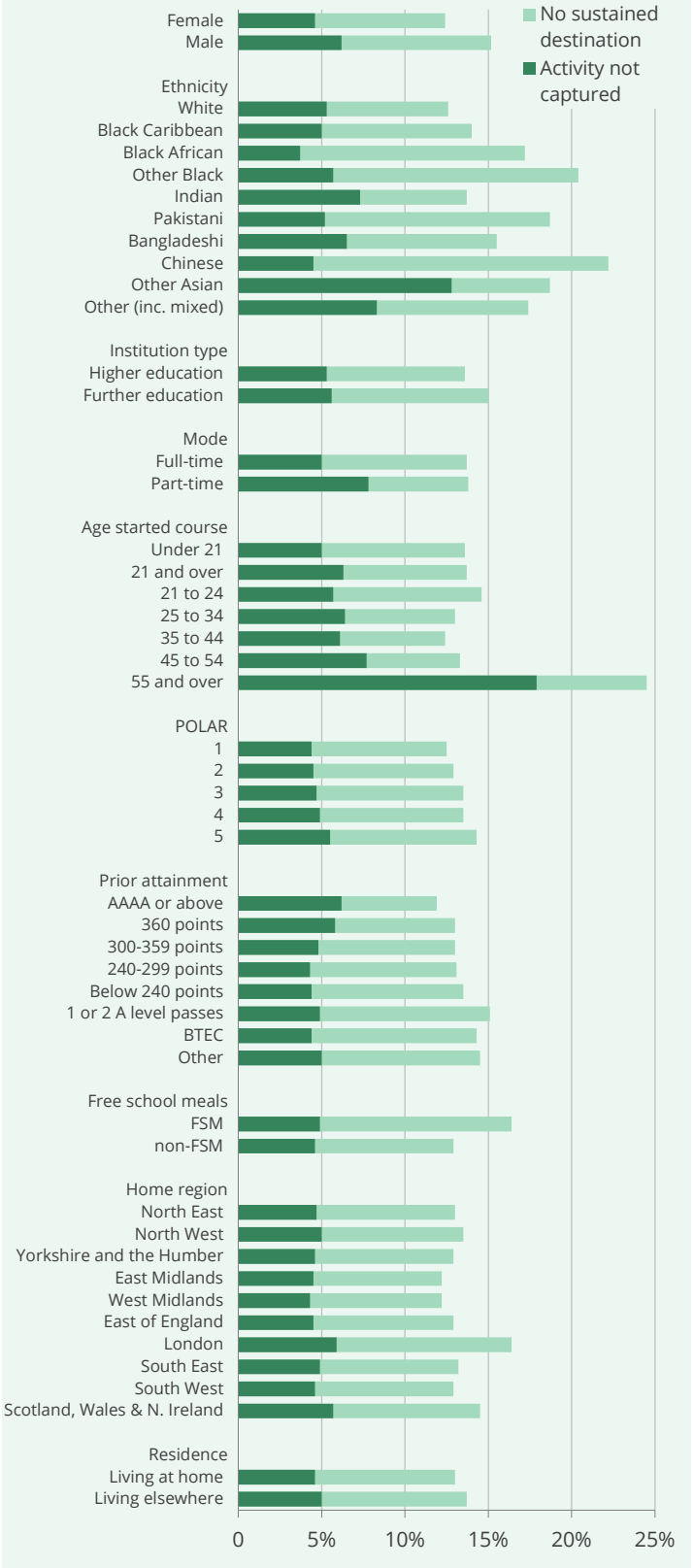
- the **oldest students**
- from **Chinese, 'other Black', 'other Asian' or Pakistani** backgrounds
- previously eligible for **free school meals**
- **living in London before higher education**
- the **least well qualified when starting** higher education

More general patterns to note are those by gender, POLAR area and prior attainment.

Some of these differences are driven by above average levels of one but not the other category. There were particularly high 'activity not captured' rates for the oldest students and those from 'other Asian' backgrounds. These are graduates who have not entered the UK labour market in any way. There were especially high 'no sustained destination' rates for those from Chinese and 'other Black' backgrounds, and graduates previously eligible for free school meals and those living in London. These are graduates who participated in the UK labour market in 2015/16, but only in a limited way.

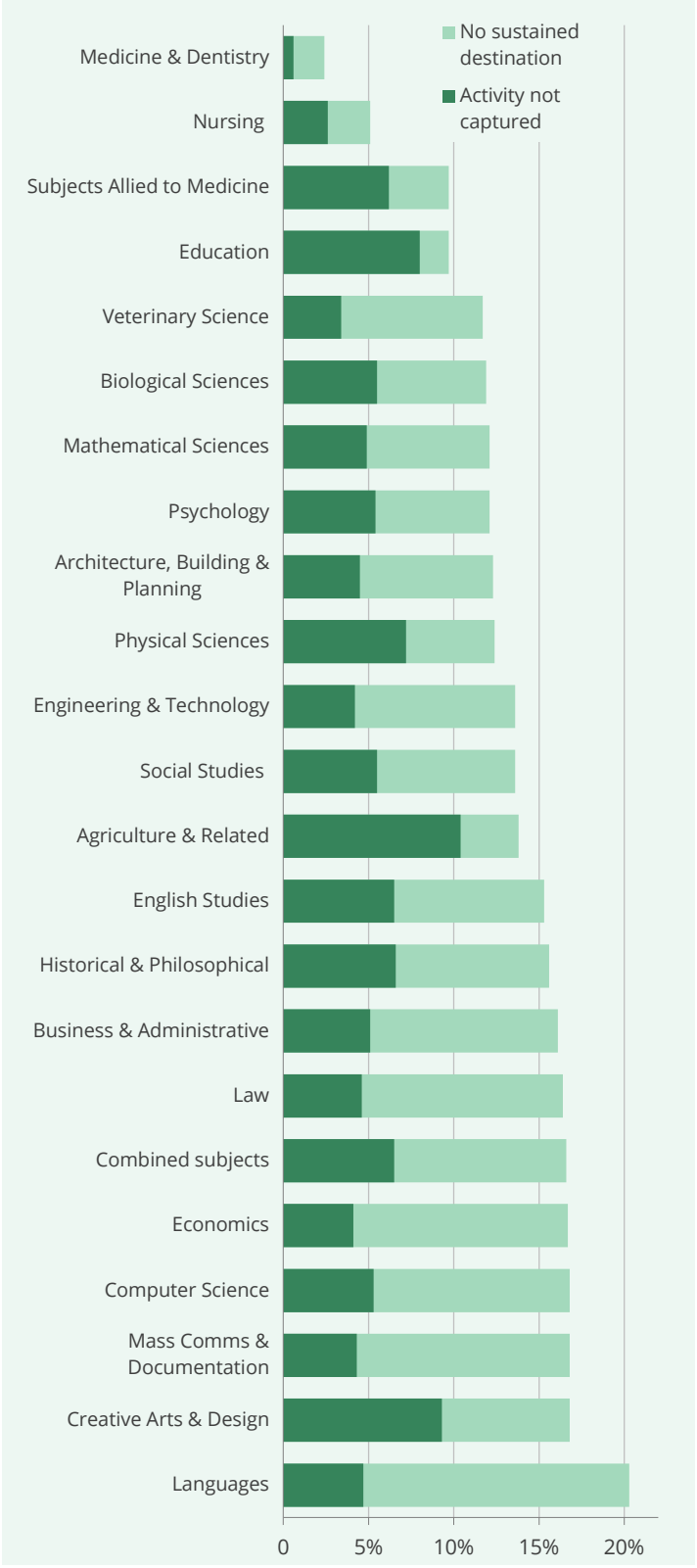
WHICH GRADUATES ARE NOT IN WORK OR STUDY?

2013/14 graduating cohort in 2015/16, selected characteristics



WHICH SUBJECTS HAVE MORE GRADUATES NOT IN WORK OR STUDY?

2013/14 graduating cohort in 2015/16, by subject of first degree



Subject studied

There was much more variation by *subject* in the rates of new graduates not in work/study. Overall rates were generally **much lower in the more vocationally-focussed subjects** and those that **require some further study**: Medicine, nursing, other subjects allied to medicine, education and veterinary science. Rates were much higher in languages and above average in art & design, communications, computer science and economics. Agriculture, education and art & design has high rates of 'activity not captured' and languages, economics and communications all had 'no sustained destination' levels which were well above average.

5. Non-economic returns to a degree

Research has shown that participation in higher education brings a **range of non-economic benefits for individuals and society**. Individuals who have experienced higher education are more likely among other things to have **better health** than those who have not attended university and are more likely to have **increased involvement in society**.

In 2013 the Department for Business, Innovation and Skills published a research paper *The Benefits of Higher Education Participation for Individuals and Society: key findings and reports "The Quadrants"*[38] the report stated that individuals who has participated in higher education showed the following characteristics:

- Greater propensity to vote
- Greater propensity to volunteer
- Greater propensity to trust and tolerate others
- Lower propensity to commit (non-violent) crime
- Better educational parenting
- Longer life expectancy
- Less likely to smoke
- Less likely to drink excessively
- Less likely to be obese
- More likely to engage in preventative care
- Better mental health
- Greater life satisfaction
- Better general health

The report also stated that society benefited from participation in higher education in the form of: greater social cohesion, trust and tolerance, less crime, political stability, greater social mobility and greater social capital.

A report[39] by the Higher Education Funding Council for England (HEFCE) in November 2017 on the effect of higher education on an individual's subjective wellbeing found that "graduates tend to be more satisfied with their lives than non-graduates; however, they also tend to be more anxious".

A paper by David Willetts (the former Minister for Universities and Science), *Issues and ideas on Higher education: Who benefits? Who pays?* discussed the non-economic benefit of higher education and stated that graduates live eight years longer than non-graduates:

> There are significant non-financial personal benefits from going to university as well. For example, graduates are healthier than non-graduates and live longer. Whatever students might get up to,

[38] BIS Research paper No 146, *The Benefits of Higher Education Participation for Individuals and Society: key findings and reports "The Quadrants"*, October 2103

[39] HEFCE 2017/31, The wellbeing of graduates, November 2017

> university does not set them up for a life of high alcohol consumption. Graduates are less likely to drink heavily, to smoke and to be obese. Overall, going to university appears to add eight years to your life. A 30-year old graduate is likely to live a further 51 years as against a further 43 years for a non-graduate.12 If we try to value these non-economic effects in financial terms the results are rather striking: the non-economic gains are actually larger in scale than the conventional economic effects.
>
> These non-economic benefits do not just accrue to individual graduates but to society as a whole. Graduates are, for example, less likely to commit crime and this feeds through into lower rates of incarceration and prison costs. It looks as if the children of graduates also benefit from their parents' education and this feeds through into better health outcomes for the children too.[40]

International data

The OECD has looked at the link between educational attainment and different social outcomes for the adult population. It has found that adults who have completed tertiary education generally report **more positive and fewer negative social outcomes**. These include:[41]

- Higher levels reporting they are in good or excellent health
- Lower levels of reported depression
- Fewer reporting activity limitation due to health problems
- Higher levels of life satisfaction
- More likely to volunteer regularly
- More likely to trust other people

While the size of the gap in these outcomes (by attainment level) varies across OECD member states and by gender/age, the findings are consistent across the OECD. These gaps in outcomes generally **increase with every additional stage of education studied**.

It is important to realise that these associations are not necessarily causal. For instance, better levels of reported health are not necessarily due to going to higher education, even in part. There could be other factors which are linked separately to both indicators. This is particularly the case with such social outcomes which will always have multiple contributory factors. If there are causal associations then these *could* potentially be linked to '**cultural' benefits attending university as well as improved employment/ earnings**. The direction of cause and effect could also work in the other direction with, for instance, lower levels of higher education participation among those with pre-existing health problems

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40 Kings College London, Rt Hon David Willets, *Issues and ideas on Higher education: Who benefits? Who pays?*, June 2015

41 Education at a Glance, various years, OECD (Indicator A8)

BRIEFING PAPER
Number 8389
19 September 2018

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